

Strained Silicon Structure

ABSTRACT

A semiconductor device includes a substrate, a first epitaxial layer, a second epitaxial layer, a third epitaxial layer, a first trench, and a second trench. The first epitaxial layer is formed on the substrate. The first layer has lattice mismatch relative to the substrate. The second epitaxial layer is formed on the first layer, and the second layer has lattice mismatch relative to the first layer. The third epitaxial layer is formed on the second layer, and the third layer has lattice mismatch relative to the second layer. Hence, the third layer may be strained silicon. The first trench extends through the first layer. The second trench extends through the third layer and at least partially through the second layer. At least part of the second trench is aligned with at least part of the first trench, and the second trench is at least partially filled with an insulating material.